

THAT WHICH IS CLAIMED IS:

1 1. A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 applying said plurality of laser beam shots to the eye in a manner that is
6 based in part on the optical path difference between the plane wave and the wavefront
7 emanating from the eye; and
8 removing tissue from the cornea of the eye in a manner that reduces the
9 optical path difference between the plane wave and the wavefront emanating from the
10 eye; whereby visual defects of the eye are reduced.

1 2. The method of claim 1 in which the size of a laser beam shot is less than
2 about 1 mm.

1 3. The method of claim 1 in which the size of a laser beam shot is less than
2 about 0.5 mm.

1 4. The method of claim 1 in which the size of the laser beam shots varies.

1 5. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1 6. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having about 20/20
3 vision.

1 7. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having better than 20/20
3 vision.

1 8. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having at least 20/10
3 vision.

1 9. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1 10. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having about 20/20
3 vision.

1 11. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having better than 20/20
3 vision.

1 12. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having at least 20/10
3 vision.

1 13. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1 14. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having about 20/40
3 vision.

1 **15.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having better than 20/40
3 vision.

1 **16.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having at least 20/20
3 vision.

1 **17.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1 **18.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having about 20/20
3 vision.

1 **19.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having better than 20/20
3 vision.

1 **20.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having at least 20/10
3 vision.

1 **21.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1 **22.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having about 20/20
3 vision.

1 **23.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having better than 20/20
3 vision.

1 **24.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having at least 20/10
3 vision.

1 **25.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1 **26.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having about 20/40
3 vision.

1 **27.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having better than 20/40
3 vision.

1 **28.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having at least 20/20
3 vision.

1 **29.** A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 mechanically removing the epithelium of the eye to expose bowmans
6 membrane;

7 applying said plurality of laser beam shots to the bowmans membrane in a
8 manner that is based in part on the optical path difference between the plane wave and
9 the wavefront emanating from the eye; and,

10 said plurality of laser beam shots removing tissue from the eye in a
11 manner that reduces the optical path difference between the plane wave and the
12 wavefront emanating from the eye; whereby the vision of the eye is improved.

1 **30.** The method of claim 29 in which the size of a laser beam shot is less than
2 about 1 mm.

1 **31.** The method of claim 29 in which the size of a laser beam shot is less than
2 about 0.5 mm.

1 **32.** The method of claim 29 in which the size of the laser beam shots varies.

1 **33.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1 **34.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having about 20/20
3 vision.

1 **35.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having better than
3 20/20 vision.

1 **36.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10
3 vision.

1 **37.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1 **38.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having about 20/20
3 vision.

1 **39.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having better than
3 20/20 vision.

1 **40.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10
3 vision.

1 **41.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1 **42.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having about 20/40
3 vision.

1 **43.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having better than
3 20/40 vision.

1 **44.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20
3 vision.

1 **45.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1 **46.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having about 20/20
3 vision.

1 **47.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having better than
3 20/20 vision.

1 **48.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10
3 vision.

1 **49.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1 **50.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having about 20/20
3 vision.

1 **51.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having better than
3 20/20 vision.

1 **52.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10
3 vision.

1 **53.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1 **54.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40
3 vision.

1 **55.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having better than
3 20/40 vision.

1 **56.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20
3 vision.

1 **57.** A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 displacing a portion of the eye to expose the stroma of the eye;
6 applying said plurality of laser beam shots to the exposed stroma in a
7 manner that is based in part on the optical path difference between the plane wave and
8 the wavefront emanating from the eye;
9 said plurality of laser beam shots removing tissue from the eye in a
10 manner that reduces the optical path difference between the plane wave and the
11 wavefront emanating from the eye; and,
12 replacing the displaced portion of the eye; whereby the vision of the eye is
13 improved.

1 **58.** The method of claim 57 in which the size of a laser beam shot is less than
2 about 1 mm.

1 **59.** The method of claim 57 in which the size of a laser beam shot is less than
2 about 0.5 mm.

1 **60.** The method of claim 57 in which the size of the laser beam shots varies.

1 **61.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1 **62.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having about 20/20
3 vision.

1 **63.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having better than
3 20/20 vision.

1 **64.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10
3 vision.

1 **65.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1 **66.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having about 20/20
3 vision.

1 **67.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having better than
3 20/20 vision.

1 **68.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10
3 vision.

1 **69.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1 **70.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having about 20/40
3 vision.

1 **71.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having better than
3 20/40 vision.

1 **72.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20
3 vision.

1 **73.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1 **74.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having about 20/20
3 vision.

1 **75.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having better than
3 20/20 vision.

1 **76.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10
3 vision.

1 **77.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1 **78.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having about 20/20
3 vision.

1 **79.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having better than
3 20/20 vision.

1 **80.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10
3 vision.

1 **81.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1 **82.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40
3 vision.

1 **83.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having better than
3 20/40 vision.

1 **84.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20
3 vision.

1 **85.** A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 applying said plurality of laser beam shots to the eye in a manner to
6 create two different focus zones and that is based in part on the optical path difference
7 between the plane wave and the wavefront emanating from the eye; and,
8 said plurality of laser beam shots removing tissue from the eye in a
9 manner that reduces the optical path difference between the plane wave and the
10 wavefront emanating from the eye; whereby the vision of the eye is improved.